Summary of invention v.s. cited prior art patents

I. Gist of Cao Invention

Current invention (hereinafter, "Cao Invention") concerns the improved design of carbide tip by adding serration on the surface of the carbide tip, thereby achieving, at least, (1) reducing the resistance from the work piece (tree stump), and (2) enhancing heat dissipation and prolonging metallurgical stability.

None of the prior arts teach the point of novelty as shown in Cao Invention, as detailed below.

II. All cited prior arts do not teach Cao Invention

1. LaFlamme 5,979,755 patent ("LaFlamme 755 Patent")

Contrary to Examiner's contention, LaFlamme 755 Patent disclosed **nothing** regarding having serration or grooves on the surface of a carbide tip.

LaFlamme 755 Patent's "parallel groove serration", as written by Examiner's 8/19/2005 Office Action ("8/19 OA") and as shown in the figures of LaFlamme 755 Patent, is actually representing the surface grinding of TOP RAKE area (to produce top rake angle). Inventor LaFlamme uses the cross-hatched parallel lines to show to Patent and Trademark Office the area (having element notation number of 126, on the first page of LaFlamme 755 Patent).

In cutting industry, purpose of TOP RAKE (desired top rake angle in LaFlamme 755 Patent is represent by cross-hatched parallel lines, which do NOT represent any groove or serration) is to allow the material cut off from work piece to be easily thrown away from the cutting edge. The angle of choice will depend on the relative hardness/softness of the work piece. Attached in Exhibit A is an excerpt Googled from the Internet re Top Rake.

2. Romagnolo 4,044,439 Patent ("Romagnolo 439 Patent")

Romagnolo 439 Patent disclosed and claimed a cutting plate containing **"a groove"** (see Abstract of Romagnolo 439 Patent) or "**a chip breaker groove** in the upper surface

defined by a downwardly inwardly declining first planar surface extending from adjacent the cutting edge to a rounded fillet and then extending upwardly as a chip breaker surface that terminates at a level above said cutting edge plane as a central planr chip breaker island portion of said upper generally planar face portion" (see Claim 1 of Romagnolo 439 Patent).

Romagnolog's one-groove and extending from tip of cutting edge does not disclose or teach Cao Invention's serration or grooves that are designed to reduce resistance and enhance heat dissipation.

Romagnolo's single chip breaker groove is disclosed for better control of a cutting tool, to prevent lifting or rolling of the cutting tool, causing serious perturbations of its functioning and risks of injury for personnel. (See column 1, lines 20 - 28).

There is NO "radiating groove serrations" disclosure anywhere in Romagnolo 439 Patent, as stated in Rejection under 35 U.S.C. §102, as cited in 8/19 OA.

Romagnolo 439 Patent thus teaches nothing about Cao Invention and seeks to solve a completely different industry problem than Cao Invention.

3. Curtis 2,325,746 Patent ("Curtis 746 Patent")

Curtis 746 Patent will be discussed together with Miller 986 Patent.

4. Miller 2,144,986 Patent ("Miller 986 Patent")

Miller 986 Patent, as well as Curtis 746 Patent, disclosed and claimed serrations/grooves NOT on the surface of the cutting carbide tip. In other words, both Curtis 746 Patent and Miller 986 Patent did NOT disclose/claim anything related to Cao Invention's structure and beneficial results.

Figures from Curtis 746 Patent clearly show that the "serrations/grooves" are NOT located in the cutting surface. These "serrations/groove", in accordance with the disclosure, will not come into contact with work piece (tree stump, for example).

Figures from Miller 986 Patent similarly showed that these serrations/grooves are not for cutting purpose.

Miller 986 Patent, at column 1, lines 48 - 53, clearly showed that the serrations are disclosed and claimed to "facilitate blade adjustment and at the same time provides for firm locking of the blades against the disturbing influences encountered in use."

Inventor's intention, as expressed in the specification, is regarded as dispositive. *SciMed Life Sys. v. Advanced Cardiovascular Sys.*, 242 F.3d 1337, 1343; CAFC, 2001. Here it is undisputed that Miller 986 Patent, as well as Curtis 746 Patent, did NOT disclose any serrations/grooves for cutting.

5. Sheridan 2,453,464 Patent ("Sheridan 464 Patent")

Examiner cited Sheridan in Notice of Reference Cited, item E.

Similar to Miller 986 Patent or Curtis 746 Patent, the "serrations/groove" in Sheridan 464 Patent, in accordance with the disclosure, will NOT come into contact with work piece (tree stump, for example), which is the essential point of Cao Invention.

At column 1, lines 31 - 37, Sheridan 464 provides that "A further object of the invention is to provide a tool holder with improved bit locking means including longitudinally extending serrations together with transversely extending pressure ribs so as to provide for right angularly disposed securing areas which will preclude transverse or longitudinal displacement of the bit."

Sheridan 464 Patent disclosed a feature (locking and preventing displacement of the bit by the serrations) not relevant to Cao Invention. Sheridan 464 Patent further disclosed nothing related to Cao Invention' essential feature.

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III. Conclusion

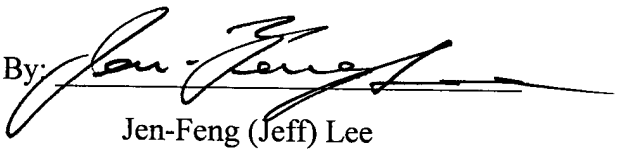
As a conclusion, it can been seen that all the cited prior arts are either:

1. Not relevant, or
2. Teaches away from Cao Invention; furthermore,
3. There is no suggestion to combine any patent to render Cao Invention obvious (in fact, even if all four cited prior arts are combined, they still would not teach Cao Invention.)

For the foregoing reasons, it is submitted that the present application is in condition for allowance, and such action is requested.

Dated: November 17, 2006

Respectfully,

By: 

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THE RAKE (OR TOP RAKE) ANGLE - This is the most important angle in a cutting tool and it determines the quality of the finished surface. The purpose of the rake angle is to allow the material cut from the workpiece to flow easily away from the cutting edge. The easier the flow the smoother the cut and the work finish. Different metals require different rake angles. The engines Tosca and Jessie use only mild steel and brass and the following rake angles are generally recommended for these.

MILD STEEL..... 20 DEGREES
BRASS..... ZERO DEGREES

Most rake angles given in metalworking texts are only a rough guide and you need to experiment to find the best for your own purposes.
I find that a rake angle a little greater than 20 degrees works best for mild steel.